### Electronic Filing: Received, Clerk's Office 02/24/2023 P.C. #10

 From:
 McGill, Richard

 To:
 Brown, Don

 Cc:
 Horton, Vanessa

Subject: FW: R18-26 proposed first notice changes Date: Monday, February 27, 2023 5:02:55 PM

Attachments: <u>image001.png</u>

<u>35-604 Board responses.pdf</u> <u>35-604RG-P r01 (46-22).pdf</u>

#### Good evening, Mr. Clerk:

Please docket this email exchange with JCAR, including the two attachments, as a public comment in R18-26.

Thank you.

Richard R. McGill, Jr.
Senior Attorney for Research & Writing
Illinois Pollution Control Board
60 E. Van Buren St., Suite 630
Chicago, Illinois 60605
richard.mcgill@illinois.gov (312) 814-6983



From: McGill, Richard

**Sent:** Monday, February 27, 2023 4:51 PM **To:** Eastvold, Jonathan C. < Jonathan E@ilga.gov> **Subject:** RE: R18-26 proposed first notice changes

#### Good evening, Jonathan:

I've attached two documents. The first document contains Board staff responses to your proposed Part 604 changes emailed to me on June 24, 2022. The second document is the JCAR line-numbered r01 referenced in your changes and our responses. Our responses include related changes prompted by your suggestions.

Thank you for your careful review. Please let me know if you have any questions.

Best regards,

Richard

Richard R. McGill, Jr.
Senior Attorney for Research & Writing
Illinois Pollution Control Board
60 E. Van Buren St., Suite 630
Chicago, Illinois 60605

### Electronic Filing: Received, Clerk's Office 02/24/2023 P.C. #10

richard.mcgill@illinois.gov (312) 814-6983



**From:** Eastvold, Jonathan C. < <u>Jonathan E@ilga.gov</u>>

**Sent:** Friday, June 24, 2022 9:39 AM

**To:** McGill, Richard < <u>Richard.McGill@illinois.gov</u>>

**Subject:** [External] R18-26 proposed first notice changes

Here are some possible technical changes, sorted by Part, for the Board to consider. Any of these changes that you wish to make can be simply copied into your first notice changes document.

Thanks in advance for your consideration.

Sincerely,

Jonathan C. Eastvold, Ph.D. Rules Analyst III

Illinois General Assembly
Joint Committee on Administrative Rules
700 Stratton Building
Springfield IL 62706
217-524-9010

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**From:** Eastvold, Jonathan C. <Jonathan E@ilga.gov>

**Sent:** Friday, June 24, 2022 9:39 AM

**To:** McGill, Richard < Richard. McGill@illinois.gov > **Subject:** [External] R18-26 proposed first notice changes

Here are some possible technical changes, sorted by Part, for the Board to consider. Any of these changes that you wish to make can be simply copied into your first notice changes document.

Thanks in advance for your consideration.

Sincerely,

Jonathan C. Eastvold, Ph.D. Rules Analyst III

Illinois General Assembly Joint Committee on Administrative Rules 700 Stratton Building Springfield IL 62706 217-524-9010

Board staff responses and related changes (2/27/23) appear in bold, red font below.

Rulemaking: Design, Operation and Maintenance Criteria (35 Ill. Adm. Code 604; 46

Ill. Reg. 8676)

### **Changes:**

- 1. In lines 189 and 190, change "14-19" to "17".
  - a. Agree.
  - b. In line 6, after "OPERATION" add a comma.
  - c. In line 41, after "Piping" add a comma.
  - d. In line 178, strike "CROSS CONNECTIONS" and add "CROSS-

CONNECTIONS". See Section 601.105 ("cross-connection" is a defined term).

- e. In line 181, strike "Cross Connections" and add "<u>Cross-Connections</u>". *See* response 1(d).
- f. In lines 182, 183, and 184, strike "Cross Connection" and add "Cross-

Connection". See response 1(d).

- g. In line 199, after "Piping" add a comma.
- 2. In line 238, strike "smooth nosed" and add "smooth-nosed". a. Agree. Strike "18-inches" and add "18 inches". b. Agree.
- 3. In line 240, strike the comma. **Agree.**

- 4. In line 247, strike "corrosion resistant" and add "<u>corrosion-resistant</u>". **Agree.**
- 5. In line 251, after "valves" add a comma. Agree.
- 6. In line 265, after "drop" add a comma. Agree.
- 7. In line 266, after "jet" add a comma. Agree.
- 8. In line 269, after "water" add a comma. Agree.
- 9. In line 270, after "fatigue" add a comma. **Agree.**
- 10. In line 273, after "tape" add a comma. Agree.
- 11. In line 291, after "flanged" add a comma. **Agree.**
- 12. In line 327, strike "1½ inch" and add "1½-inch".

  Agree.
- 13. In lines 327-328, strike "corrosion resistant" and add "<u>corrosion-resistant</u>". **Agree.**
- 14. In line 342, strike "made" and add "<u>installed</u>". **Disagree. After "materials" add "<u>and</u>".**
- 15. In line 343, after "prevent" add "the". **Agree.**
- 16. In lines 355 and 360, after the subsection label add "<u>a</u>". **Agree.**
- 17. In line 367, after "status" add a comma. **Agree.**
- In lines 381, 383, and 385, after the subsection label add "an".
   Agree for lines 381 and 385. Disagree for line 383. In line 383, after the subsection label add "the".

- 19. In line 412, strike "settlers" and add "settler".

  Agree.
- 20. In line 425, strike "back siphonage" and add "back-siphonage". Agree.
- 21. In line 501, strike "cross connections" and add "cross-connections".

  Agree.
- 22. In line 538, after "with" add "<u>a</u>". **Agree.**
- 23. In line 547, strike "on site" and add "<u>on-site</u>". **Agree.**
- 24. In lines 552 and 564, after "solubility" add "of".

  Disagree. Other "less than" and "greater than" formulations in the rules do not add "of".
- 25. In line 566, strike "High density" and add "<u>High-density</u>". **Agree.**
- 26. In line 578, after "solubility" add "<u>of</u>". **Disagree.** *See* response 24.
- 27. In line 600, strike "where" and add "when". **Agree.**
- 28. In line 634, strike "prior to" and add "<u>before</u>". **Agree.**
- 29. In line 655, strike "high rate" and add "high-rate". Agree.
- 30. In line 656, strike "for". **Agree.**
- 31. In line 666, strike "six inch" and add "six-inch".

  Agree.
- 32. In line 667, strike "Agency approved cross connection" and add "<u>Agency-approved cross-connection</u>".

  Agree.
- 33. In line 674, strike "adjustable rate" and add "adjustable-rate". **a. Agree.**

#### b. In line 715, strike "cross connection" and add "cross-connection".

- 34. In line 718, after "arsenic" add a comma. **Agree.**
- 35. In line 724, strike "if connected to the treated water system,".

  Agree. Strike "back siphonage" and add "back-siphonage".
- 36. In line 725, after "device" add ", if connected to the treated water system".a. Agree.b. In line 730, strike "can" and add "may".
- 37. In line 734, strike "in" and add "<u>into</u>". **Agree.**
- 38. In line 759, strike "utilized" and add "<u>used</u>". **Agree.**
- 39. In line 772, strike "Cross Connection" and add "<u>Cross-Connection</u>". **Agree.**
- 40. In line 778, strike "back flow or back siphonage" and add "backflow or back-siphonage". **Agree.**
- 41. In line 781, delete "educator" and reinstate "eductor".

  Agree.
- 42. In line 809, after "on" add "the". **Agree.**
- 43. In line 830, strike "down flow" and add "downflow".

  Agree.
- 44. In line 832, after "systems" add a comma. a. Agree. After "to" add "the". b. Agree.
- 45. In line 838, after "rinse" add a comma.a. Agree.b. In line 839, strike "back siphonage" and add "back-siphonage".
- 46. In line 861, after "effluent" add a comma. Agree.
- 47. In line 871, strike "corrosion resistant" and add "corrosion-resistant".
  a. Agree.
  b. In line 873, strike "back siphonage" and add "back-siphonage".

48. In line 883, strike "corrosion resistant" and add "<u>corrosion-resistant</u>".

Agree.

Lines 1039-1040: Should the Manual of Water Supply Practices be properly incorporated by reference? No but the introductory signal "See" should be added before the citation, as in the preceding Board Note to indicate a supporting citation. At the beginning of line 1039, add "See".

- 49. In line 1042, after "on" add "the". **Agree.**
- 50. In line 1048, after "indicates" add "<u>a</u>". **Agree.**
- 51. In line 1053, after "indicates" add "<u>a</u>". **Agree.**
- 52. In line 1057, strike "is not applicable" and add "does not apply".

  Agree.
- 53. In line 1061, after "If" add "the". a. Agree. After "using" add "a". b. Agree.
- 54. In lines 1078, 1080, and 1082, add a semicolon at the end of the line.

  Agree.
- 55. In line 1093, after "with" add "the". Agree.
- 56. In line 1133, after "effluent" add a comma. Agree.
- 57. In line 1143, strike "corrosion resistant" and add "<u>corrosion-resistant</u>".

  Agree.
- 58. In line 1143, strike "back siphonage" and add "<u>back-siphonage</u>". **Agree (for line 1145).**
- 59. In lines 1157-1158, strike "corrosion resistant" and add "<u>corrosion-resistant</u>". **Agree.**
- 60. In line 1191, strike "Cross Connection" and add "<u>Cross-Connection</u>". **a. Agree.** After "rinse" add a comma. **b. Agree.**
- In line 1213, after "Detention" add a comma.a. Agree.b. In line 1218, after "ozone" add a comma.

- 62. In line 1230, after "vent" add a comma.

  Disagree. Strike "vent and access hatch" and add "vents, and access hatches".
- 63. In line 1237, after "per" add "the".a. Agree.b. In line 1258, strike "and/or" and add "or".
- 64. In line 1270, after "oxidation" add a comma.a. Agree.b. In line 1276, strike "and/or" and add "or".
- 65. In line 1278, after "manganese" add a comma. **Agree.**
- 66. In line 1298, strike "Corrosion resistant" and add "<u>Corrosion-resistant</u>". **Agree.**
- 67. In line 1309, after "coagulation" add a comma. **Agree.**
- 68. In line 1339, after "measure" add "the". **Agree.**
- 69. In line 1347, strike "in relation to" and add "<u>for the</u>". **Agree.**
- 70. In line 1350, after "in" add "<u>a</u>". **Agree.**
- 71. In line 1365, after "prevent" add "the". Agree.
- 72. In line 1388, strike "Cross connection" and add "<u>Cross-connection</u>". **Agree.**
- 73. In line 1396, strike "airgap" and add "air gap". Agree.
- 74. In line 1399, after "repair" add a comma. Agree.
- 75. In line 1445, after "powders" add a comma. Agree (for the second "powders").
- 76. In line 1448, strike "corrosion resistant" and add "corrosion-resistant".

Agree.

- 77. In line 1477, after "spillage" add a comma. **Agree.**
- 78. In line 1478, after "treatment" add a comma.

  Disagree. Strike the comma and add "or".
- 79. In line 1489, strike the comma. **a. Agree.** After "or" add ", if the liquid level can be observed in a gauge tube or through translucent sidewalls of the tank,". **b. Agree.**
- 80. In lines 1490-1491, strike "if liquid level can be observed in a gauge tube or through translucent sidewalls of the tank".

  Agree.
- 81. In line 1513, strike "color coded" and add "<u>color-coded</u>". **Agree.**
- 82. In line 1521, after "slip-proof" add a comma. **Agree.**
- 83. In lines 1521-1522, strike "well drained" and add "well-drained".

  Agree.
- 84. In line 1524, after "facilities" add a comma. Agree.
- 85. In line 1534, after "storage" add a comma.

  Agree (for the second "storage").
- 86. In line 1545, after "with" add "an". Agree.
- 87. In line 1547, after "appurtenances" add a comma.
  a. Agree.
  b. In line 1556, strike "CROSS CONNECTIONS" and add "CROSS-CONNECTIONS".
  - c. In line 1558, strike "Cross Connection" and add "Cross-Connection".
- 88. In lines 1560 and 1562, strike "cross connection" and add "<u>cross-connection</u>". **Agree.**
- 89. In line 1575, after "model" add a comma. Agree.
- 90. In line 1580, after "of' add "the".

#### Agree.

- 91. In line 1593, strike "Cross Connection" and add "<u>Cross-Connection</u>". **Agree.**
- 92. In line 1601, after "530" add "and https://www.siue.edu/ertc". Agree.
- 93. In line 1602, strike "cross connection" and add "cross-connection". **a. Agree.** Strike "device" and add "devices". **b. Agree.** Strike "hands on" and add "hands-on". **c. Agree.**
- 94. In line 1606, strike "complete and submit an application" and add "apply". Agree.
- 95. In line 1633, after "to" add "<u>an</u>". **Agree.**
- 96. In line 1634, after "revoked" add a comma. Agree.
- 97. In line 1640, after "flagrant' add a comma. Agree.
- 98. In line 1641, after "testing" add a comma. **a. Agree.** Strike "cross connection" and add "cross-connection". **b. Agree.**
- 99. In line 1658, strike "on the basis of" and add "<u>based on</u>". **Agree.**
- 100. In line 1661, strike "upon" and add "<u>on</u>". **Agree.**
- 101. In line 1667, strike "Request" and add "<u>A request</u>". **Agree.**
- 102. In line 1672, strike "Should a hearing be" and add "<u>If a hearing is</u>". **Agree.**
- 103. In line 1688, after "wellhouse" add a comma. **Agree.**

1		TITLE 35: ENVIRONMENTAL PROTECTION
2		SUBTITLE F: PUBLIC WATER SUPPLIES
3		CHAPTER I: POLLUTION CONTROL BOARD
4		
5		PART 604
6		DESIGN, OPERATION AND MAINTENANCE CRITERIA
7		
8		SUBPART A: GENERAL PROVISIONS
9		
10	Section	
11	604.100	Purpose
12	604.105	General Requirements
13	604.110	Location
14	604.115	Usage
15	604.120	Piping Identification
16	604.125	Automatic Equipment
17	604.130	Operational Testing Equipment
18	604.135	Repair Work and Emergency Operation
19	604.140	Nitrification Action Plan
20	604.145	Exceptions for Community Water Supplies
21	604.150	Protection of Community Water Supply Structures
22	604.155	Electrical Controls and Standby Power
23	604.160	Safety
24	604.165	Monthly Operating Report
25	604.170	Security
26		
27		SUBPART B: SOURCE DEVELOPMENT
28		
29	Section	
30	604.200	General Requirements
31	604.205	Surface Water Quantity
32	604.210	Surface Water Quality
33	604.215	Surface Water Structures
34	604.220	Invasive Mussel Control
35	604.225	Reservoirs
36	604.230	Groundwater Quantity
37	604.235	Groundwater Quality
38	604.240	General Well Construction
39	604.245	Well Testing and Records
40	604.250	Aquifer Types and Construction Methods
41	604.255	Well Pumps, Discharge Piping and Appurtenances
42		
43		SUBPART C: SOURCE WATER PROTECTION PLAN

4.4		
44 45	Castian	
	Section	Dumass
46	604.300	Purpose Savrag Water Protection Plan Requirement and Contents
47	604.305	Source Water Protection Plan Requirement and Contents
48	604.310	Vision Statement
49	604.315	Source Water Assessment
50	604.320	Source Water Protection Plan Objectives
51	604.325	Action Plan
52	604.330	Submission
53	604.335	Agency Approval
54	604.340	Evaluation and Revision
55		
56		SUBPART D: AERATION
57		
58	Section	
59	604.400	General Requirements for Aeration
60	604.405	Forced or Induced Draft Aeration
61	604.410	Spray Aeration
62	604.415	Pressure Aeration
63	604.420	Packed Tower Aeration
64	604.425	Other Methods of Aeration
65		
66		SUBPART E: CLARIFICATION
67		
68	Section	
69	604.500	General Clarification Requirements
70	604.505	Coagulation
71	604.510	Flocculation
72	604.515	Sedimentation
73	604.520	Solids Contact Unit
74	604.525	Tube or Plate Settlers
75	604.530	Other High Rate Clarification Processes
76		<u> </u>
77		SUBPART F: FILTRATION
78		
79	Section	
80	604.600	Filtration
81	604.605	Rapid Rate Gravity Filters
82	604.610	Rapid Rate Pressure Filters
83	604.615	Deep Bed Rapid Rate Gravity Filters
84	604.620	Biologically Active Filtration
85		
86		SUBPART G: DISINFECTION

0.5		
87		
88	Section	
89	604.700	Disinfection Requirement
90	604.705	Chlorination Equipment
91	604.710	Points of Application
92	604.715	Contact Time
93	604.720	Inactivation of Pathogens
94	604.725	Residual Chlorine
95	604.730	Continuous Chlorine Analyzers
96	604.735	Chlorinator Piping
97		
98		SUBPART H: SOFTENING
99		
100	Section	
101	604.800	Lime or Lime-soda Process
102	604.805	Cation Exchange Process
103		
104		SUBPART I: STABILIZATION
105		
106	Section	
107	604.900	General Stabilization Requirements
108	604.905	Carbon Dioxide Addition
109	604.910	Phosphates
110	604.915	Split Treatment
111		
112		SUBPART J: OTHER TREATMENT
113		
114	Section	
115	604.1000	Presedimentation
116	604.1005	Anion Exchange
117	604.1010	Iron and Manganese Control
118	604.1015	Taste and Odor Control
119	604.1020	Powdered Activated Carbon
120		
121		SUBPART K: CHEMICAL APPLICATION
122		
123	Section	
124	604.1100	General Chemical Application Requirements
125	604.1105	Feed Equipment and Chemical Storage
126	604.1110	Protective Equipment
127	604.1115	Chlorine Gas
128	604.1120	Acids and Caustics
129	604.1125	Chlorine Dioxide

130	604.1130	Sodium Chlorite
131	604.1135	Sodium Hypochlorite
132	604.1140	Ammonia
133	604.1145	Potassium Permanganate
134	604.1150	Fluoride
135		
136		SUBPART L: PUMPING FACILITIES
137		
138	Section	
139	604.1200	General
140	604.1205	Pumping Stations
141	604.1210	Pumps
142	604.1215	Booster Pumps
143	604.1219	Automatic and Remote-Controlled Stations
144	604.1225	Appurtenances
145	004.1223	Appurchances
146		SUBPART M: STORAGE
147		SODIARI M. STORAGE
148	Section	
149	604.1300	General Storage Requirements
150	604.1305	Overflow
151	604.1310	Access to Water Storage Structures
152	604.1315	Vents
153	604.1313	Level Controls
154	604.1325	Roof and Sidewalls
155	604.1330	Painting and Cathodic Protection
156	604.1335	Treatment Plant Storage
157	604.1340	Elevated Storage
158	604.1345	Hydropneumatic Storage
159	604.1350	Combination Pressure Tanks and Ground Storage
160		
161		SUBPART N: DISTRIBUTION
162	~ .	
163	Section	
164	604.1400	General Distribution System Requirements
165	604.1405	Installation of Water Mains
166	604.1410	Materials
167	604.1415	System Design
168	604.1420	Valves
169	604.1425	Hydrants
170	604.1430	Air Relief Valves
171	604.1435	Valve, Meter and Blow Off Chambers
172	604.1440	Sanitary Separation for Finished Water Mains

	1st Notic	<u>e</u>		JCAR350604-2208676r01					
173	604.1445	Sanita	ary Separation for Raw Water Mains						
174	604.1450								
175	604.1450 Surface Water Crossings 604.1455 Water Service Line								
176	604.1460	Water	Loading Stations						
177									
178			SUBPART O: CROSS CONNE	ECTIONS					
179									
180	Section								
181	604.1500	Cross	Connections						
182	604.1505	Cross	Connection Control Program						
183	604.1510		Connection Control Device Inspectors						
184	604.1515	Agen	cy Approved Cross Connection Control	Measures					
185	604.1520		D-19 Emergency Provisions (Repealed						
186				_					
187	604.TABLE	A	Steel Pipe						
188			•						
189	AUTHORIT	Y: Imp	lementing Section 14-19 and authorized	by Section 27 of the Illinois					
190	Environmenta	al Prote	ction Act [415 ILCS 5/14-19 and 27].	•					
191									
192	SOURCE: A	dopted	in R18-17 at 43 Ill. Reg. 8064, effectiv	e July 26, 2019; emergency					
193	amendment in	n R20-2	0 at 44 Ill. Reg. 7777, effective April 1	7, 2020, for a maximum of 150 days;					
194			at 44 III. Reg. 14736, effective August 2						
195			ective						
196	_								
197			SUBPART B: SOURCE DEVEL	LOPMENT					
198									
199	Section 604.2	255 W	ell Pumps, Discharge Piping and App	ourtenances					
200									
201	a)	Wher	e line shaft pumps are used:						
202									
203		1)	the casing must be firmly connected t	o the pump structure or have the					
204		,	casing inserted into a recess extending						
205			base;	1 1					
206									
207		2)	the pump foundation and base must b	e at least six inches above the					
208		,	finished floor elevation; and						
209			•						
210		3)	lubricants must comply with Section	604.105(f).					
211		•	• •						
010	1.	X X 71	1 '11 ' 1						

Where a submersible pump is used:

b)

212213

1<sup>st</sup> Notice JCAR350604-2208676r01 214 1) the top of the casing must be effectively sealed to prohibit the entrance of 215 water under all conditions of vibration or movement of conductors or 216 cables; 217 218 2) the electrical cable must be firmly attached to the riser pipe at 20-foot 219 intervals or less; and 220 221 3) mercury seals must not be used when an existing submersible pump is 222 replaced or a new submersible pump is installed. 223 224 c) Discharge Piping 225 226 1) The discharge piping for each well must: 227 228 A) be designed to minimize friction loss; 229 230 B) be equipped with a check valve in or at the well, a shutoff valve, a 231 pressure gauge, and a means of measuring flow; 232 233 C) be protected from the entrance of contamination; 234 235 D) have control valves and appurtenances located above the 236 pumphouse floor when an above-ground discharge is provided; 237 238 be equipped with a smooth nosed sampling tap at least 18-inches E) 239 above the floor to facilitate sample collection, located at a point 240 where positive pressure is maintained, but before any treatment 241 chemicals are applied; 242 243 F) when necessary to remove entrapped air from the well, be 244 equipped with an air release-vacuum relief valve located upstream from the check valve, with exhaust/relief piping terminating in a 245 246 down-turned position at least 18 inches above the floor and covered with a 24 mesh, corrosion resistant screen; 247 248 249 G) be valved to permit test pumping and control of each well; 250 251 H) have all exposed piping, valves and appurtenances protected 252 against physical damage and freezing; 253 254 I) be anchored to prevent movement and be supported to prevent excessive bending forces; 255

256

1<sup>st</sup> Notice JCAR350604-2208676r01 257 J) be protected against surge or water hammer; and 258 259 K) be constructed so that it can be disconnected from the well or well pump to allow the well pump to be pulled. 260 261 262 The well must have a means of pumping to waste that is not directly 2) 263 connected to a sewer. 264 265 3) The discharge, drop or column piping inside the well for submersible, submersible jet and submersible line shaft pumps must: 266 267 268 A) be capable of supporting the weight of the submersible pump, 269 piping, water and appurtenances, and of withstanding the thrust, 270 torque, torque fatigue and other reaction loads created during 271 pumping; and 272 273 B) use lubricants, fittings, brackets, tape or other appurtenances that 274 comply with Section 604.105(f). 275 Pitless Well Units 276 d) 277 278 1) Pitless units must: 279 280 A) be shop-fabricated from the point of connection with the well 281 casing to the unit cap or cover; 282 283 B) be threaded or welded to the well casing; 284 285 C) be of watertight construction throughout; 286 287 be of materials and weight at least equivalent and compatible to the D) 288 casing; 289 290 have field connection to the lateral discharge from the pitless unit E) 291 of threaded, flanged or mechanical joint connection; and 292 293 terminate at least 18 inches above final ground elevation or three F) 294 feet above the 100-year flood level or the highest known flood 295 elevation, whichever is higher. 296 297 The design of the pitless unit must make provision for: 2) 298 299 A) access to disinfect the well;

1<sup>st</sup> Notice JCAR350604-2208676r01 300 301 B) a properly constructed casing vent meeting the requirements of 302 subsection (e); 303 304 facilities to measure water levels in the well, under subsection (f); C) 305 306 D) a cover at the upper terminal of the well that will prevent the 307 entrance of contamination: 308 309 E) a contamination-proof entrance connection for electrical cable; 310 311 F) an inside diameter as great as that of the well casing to facilitate work and repair on the well, pump, or well screen; and 312 313 314 G) at least one check valve within the well casing. 315 316 3) If the connection to the casing is by field weld, the shop-assembled unit 317 must be designed specifically for field welding to the casing. The only 318 field welding permitted will be that needed to connect a pitless unit to the 319 casing. 320 321 Casing Vent e) 322 323 1) Well casing must be vented to the atmosphere. 324 325 2) The vent must terminate in a downturned position, at or above the top of 326 the casing or pitless unit, no less than 12 inches above grade or floor, in a minimum 1½ inch diameter opening covered with a 24 mesh, corrosion 327 328 resistant screen. 329 330 The pipe connecting the casing to the vent must be of adequate size to 3) 331 provide rapid venting of the casing. 332 333 Where vertical turbine pumps are used, vents may be placed into the side 4) 334 of the casing. 335 336 f) Water Level Measurement 337 338 Each well must be equipped with a means for taking water level 1) 339 measurements.

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1<sup>st</sup> Notice JCAR350604-2208676r01 341 2) Where pneumatic water level measuring equipment is used, it must be 342 made using corrosion-resistant materials attached firmly to the drop pipe 343 or pump column to prevent entrance of foreign materials. 344 345 Observation wells must meet the requirements in 77 Ill. Adm. Code 920.170. g) 346 (Source: Amended at 46 Ill. Reg. \_\_\_\_\_, effective 347 348 349 SUBPART C: SOURCE WATER PROTECTION PLAN 350 351 Section 604.315 Source Water Assessment 352 353 The source water assessment must contain the following information: a) 354 355 1) statement of the importance of the source water; 356 357 2) a list of water supplies that obtain water from this community water 358 supply; 359 360 3) delineation of all sources of water used by the community water supply, 361 including: 362 for surface water, description of the watershed, map of the 363 A) 364 watershed, and intake locations; 365 366 for groundwater, the well identification number, well description, B) 367 well status and well depth; a description of setback zones; and a description of the aquifer for each well; 368 369 370 a report on the quality of the source water for all sources of water 4) delineated in subsection (a)(3), including: 371 372 373 A) when and where samples used to determine the quality of the 374 source water were taken. These samples must be tested by a 375 certified laboratory; and

the certified laboratory's results;

identification of potential sources of contamination to the source water;

analysis of the source water's susceptibility to contamination; and

a report on the quality of the finished water;

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380 381

382 383 B)

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6)

7)

384			
385		8)	explanation of the community water supply's efforts to protect its source
386			water.
387			
388	b)	-	request, the Agency will provide technical assistance to a community water
389		suppl	y in conducting the source water assessment.
390			
391	c)		mmunity water supply may use a Source Water Assessment Program Fact
392		Sheet	prepared by the Agency to fulfill the requirements of this Section.
393			
394	(Source	ce: Am	nended at 46 Ill. Reg, effective)
395			
396			SUBPART E: CLARIFICATION
397			
398	Section 604.5	525 Tu	ibe or Plate Settlers
399			
400	a)		er units consisting of variously shaped tubes or plates installed in multiple
401		-	s and at an angle to the flow may be used for sedimentation, following
102		flocci	ulation.
103	• \		
404	b)	Tube	or plate settlers must meet the following requirements:
105		1)	
106 107		1)	Inlet and outlet design must maintain velocities suitable for settling in the
107			basin and to minimize short-circuiting;
108		2)	
109		2)	Plate units must be designed to minimize maldistribution across the units;
410		2)	Durin mining from sottler units must be sized to facilitate a quiel flush of
411 412		3)	Drain piping from settler units must be sized to facilitate a quick flush of
+12 413			the settlers units and to prevent flooding of other portions of the plant;
+13 414		4)	Outdoor installations must be protected against freezing, including
41 <del>5</del>		4)	sufficient freeboard above the top of the settlers;
416			sufficient necodard above the top of the settlers,
417		5)	Tubes must have a maximum application rate of 2 gpm per square foot of
418		3)	cross-sectional area, unless higher rates are shown through pilot plant or
419			in-plant demonstration studies;
120			in plant demonstration studies,
121		6)	Plates must have a maximum application rate of 0.5 gpm per square foot,
122		0)	based on 80 percent of the projected horizontal plate area;
123			cases on to percent of the projected nonzontal plate area,
124		7)	Flushing lines must be provided to facilitate maintenance and must be
125		.,	properly protected against backflow or back siphonage;
126			rr, r against carries. or own orbitoliago,

1<sup>st</sup> Notice JCAR350604-2208676r01 427 8) Inlets and outlets must conform with Section 604.515(b) and (d); 428 429 9) The units' support system must be able to carry the weight of the settler 430 units when the basin is drained plus any additional weight to support 431 maintenance; and 432 433 10) Settler units must accommodate: 434 435 A) A water or air jet system for cleaning their tubes or plates; and 436 437 B) Dropping their water level to allow cleaning with the system 438 identified in subsection (b)(10)(A). 439 440 (Source: Amended at 46 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_) 441 442 SUBPART F: FILTRATION 443 444 Section 604.605 Rapid Rate Gravity Filters 445 446 The use of rapid rate gravity filters requires pretreatment. a) 447 448 For community water supplies treating surface water, groundwater under the b) 449 direct influence of surface water, or using lime soda softening treatment, unless 450 otherwise approved by the Agency under Section 604.145(b), the nominal 451 filtration rates must not exceed 3 gal/min/ft<sup>2</sup> of filter area for single media filters and 5 gal/min/ft<sup>2</sup> for multi-media filters. Filtration rates must be reduced when 452 453 treated water turbidity exceeds the standards in 35 Ill. Adm. Code 611. 454 For community water supplies treating groundwater and not using lime soda 455 c) 456 softening treatment, unless otherwise approved by the Agency under Section 457 604.145(b), the rate of filtration must not exceed 4 gal/min/ft<sup>2</sup> of filter area. 458 459 d) Number of Filter Units-460 461 1) A minimum of two units must be provided. Each unit must be capable of meeting the plant design capacity or the projected maximum daily demand 462 at the approved filtration rate. 463 464 465 2) Where more than two filter units are provided, the filters must be capable 466 of meeting the plant design capacity at the approved filtration rate with one filter removed from service. 467 468

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469 470 471 472		3)	Where declining rate filtration is provided, the variable aspect of filtration rates and the number of filters must be considered when determining the design capacity for the filters.
473 474	e)		ctural Details and Hydraulics. The filter structure must be designed to provide the following:
475 476		1)	vertical walls within the filter;
477 478		2)	no protrusion of the filter walls into the filter media;
479 480 481		3)	cover by superstructure;
482 483		4)	head and walking room to permit normal inspection and operation;
484 485		5)	minimum depth of filter box of 8.5 feet;
486 487		6)	minimum water depth over the surface of the filter media of 3 feet;
488 489		7)	trapped effluent to prevent backflow of air to the bottom of the filters;
490 491		8)	prevention of floor drainage to the filter with a minimum 4-inch curb around the filters;
492 493 494		9)	prevention of flooding by providing overflow;
495 496		10)	maximum velocity of treated water in pipe and conduits to filters of 2 ft/sec;
497 498 499		11)	cleanouts and straight alignment for influent pipes or conduits where solids loading is heavy, or following lime soda softening;
500 501 502		12)	construction to prevent cross connections, short-circuiting, or common walls between potable and non-potable water; and
503 504 505		13)	wash water drain capacity to carry maximum flow.
506 507	f)	Wasł	n water troughs must be constructed such that:
508 509		1)	the bottom elevation is above the maximum level of expanded media during washing;
510 511		2)	a 2-inch freeboard is provided at the maximum rate of wash;

1<sup>st</sup> Notice JCAR350604-2208676r01 512 513 3) the top edge is level and is all at the same elevation; 514 515 4) troughs are spaced so that each trough serves the same number of square 516 feet of filter area: and 517 518 5) the maximum horizontal travel of suspended particles to reach the trough 519 does not exceed 3 feet. 520 521 The filter media must be composed of clean silica sand or other natural or g) synthetic media free from detrimental chemical or bacterial contaminants and 522 523 must meet the following requirements: 524 525 1) a total depth of not less than 24 inches; 526 527 a uniformity coefficient of the smallest material not greater than 1.65; 2) 528 529 3) a minimum of 12 inches of media with an effective size range of 0.45 mm 530 to 0.55 mm; 531 532 4) filter media specifications: 533 534 A) Filter anthracite must consist of hard, durable anthracite coal 535 particles of various sizes. Blending of non-anthracite material is 536 not acceptable. Anthracite must have: 537 538 i) an effective size of 0.45 mm to 0.55 mm with uniformity 539 coefficient not greater than 1.65 when used alone; 540 541 an effective size of 0.8 mm to 1.2 mm with a uniformity ii) 542 coefficient not greater than 1.7 when used as a cap; 543 544 iii) an effective size less than 0.8 mm for anthracite used as a 545 single media on potable groundwater for iron and 546 manganese removal only (effective sizes greater than 0.8 mm may be approved based upon on site pilot plant 547 548 studies); 549 550 a specific gravity greater than 1.4; iv) 551 552 an acid solubility less than 5 percent; and

v)

vi)

a Moh's scale of hardness greater than 2.7.

553 554

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555				
556		B)	Sand	must have:
557				
558			i)	an effective size of 0.45 mm to 0.55 mm;
559				
560			ii)	a uniformity coefficient of not greater than 1.65;
561				
562			iii)	a specific gravity greater than 2.5; and
563				
564			iv)	an acid solubility less than 5 percent.
565				
566		C)	High	density sand must consist of hard, durable, and dense grain
567			garne	t, ilmenite, hematite or magnetite, or associated minerals of
568			those	ores that will resist degradation during handling and use, and
569			must:	
570				
571			i)	contain at least 95 percent of the associated material with a
572				specific gravity of 3.8 or higher;
573				
574			ii)	have an effective size of 0.2 to 0.3 mm;
575				
576			iii)	have a uniformity coefficient of not greater than 1.65; and
577				
578			iv)	have an acid solubility less than 5 percent.
579				•
580		D)	Granı	ular activated carbon as a single media may be considered for
581			filtrat	ion only after pilot or full-scale testing and with prior
582			appro	val of the Agency. The design must include the following:
583				
584			i)	The media must meet the basic specifications for filter
585				media in subsections $(g)(1)$ through $(g)(3)$ .
86				
587			ii)	There must be provisions for a free chlorine residual and
588				adequate contact time in the water following the filters and
589				prior to distribution.
590				•
591			iii)	Provisions must be made for frequent replacement or
592				regeneration.
593				
594		E)	Other	media types or characteristics must be approved by the
595		,	Agen	**
596			J	•
597	5)	suppo	rting m	nedia designed as follows based on the type of filter material:

598							
599			A)	A three	e-inch layer of to	rpedo sand must	t be used as a supporting
600				media	for filter sand wh	ere supporting	gravel is used, and must
601				have:			_
602							
603				i)	an effective size	of 0.8 mm to 2.	.0 mm; and
604							
605				ii)	a uniformity coe	fficient not grea	ater than 1.7.
606							
607			B)	Gravel			
608							
609				i)	When gravel is u	used as the supp	oorting media, it must
610					consist of cleane	ed and washed, h	hard, durable, rounded
611					silica particles ar	nd must not incl	lude flat or elongated
612					particles.		
613							
614				ii)	The coarsest gra	vel must be 2.5	inches in size when the
615					gravel rests direc	ctly on a lateral	system, and must extend
616					above the top of	the perforated l	laterals.
617							
618				iii)	Not less than for	ır layers of grav	vel must be provided in
619					accordance with	the following s	size and depth distribution:
620							
621					Size		Depth
622					2½ to 1	1½ inches	5 to 8 inches
623					1½ to 3	3/4 inches	3 to 5 inches
624					3/4 to 1/2	inches	3 to 5 inches
625						16 inches	2 to 3 inches
626					3/16 to	3/32 inches	2 to 3 inches
627							
628				iv)	Reduction of gra	avel depths and	other size gradations may
629					be approved by t	the Agency upor	on justification for slow sand
630					filtration or whe	n proprietary fil	lter bottoms are specified.
631							
632	h)	Filter E	<b>3</b> ottoms	s and Sta	rainer Systems		
633							
634		1)				-	e of porous plate bottoms to
635			preven	ıt cloggi	ng and failure of	the underdrain	system.
636							
637		2)	The de	sign of	manifold type co	llection systems	s must:
638							
639			A)	minim	ize loss of head in	n the manifold a	and laterals;
640							

1<sup>st</sup> Notice JCAR350604-2208676r01 641 B) ensure even distribution of washwater and even rate of filtration 642 over the entire area of the filter; 643 644 provide the ratio of the area of the strainer systems' final openings C) 645 to the area of the filter at about 0.003; 646 647 D) provide the total cross-sectional area of the laterals at about twice 648 the total area of the final openings; 649 provide the cross-sectional area of the manifold at 1.5 to 2 times 650 E) the total area of the laterals; and 651 652 653 F) direct lateral perforations without strainers downward. 654 655 3) The Agency may approve departures from these standards for high rate 656 filters and for propriety bottoms. 657 i) 658 The following appurtenances must be provided for every filter: 659 660 1) influent and effluent sampling taps; 661 662 2) a gauge indicating loss of head; 663 664 3) a meter indicating the instantaneous rate of flow; 665 666 4) a pipe for filtering to waste that has a six inch or larger air gap, or other 667 Agency approved cross connection control measure; 668 669 5) a continuously recording Nephelometer capable of measuring and 670 recording filter effluent turbidity at maximum 15-minute intervals, and with alarm capability to notify the operator if filtered water turbidity 671 672 exceeds 0.3 NTU (Nephelometric Units); 673 674 an adjustable rate valve to allow the operator to gradually control the flow 6) 675 rate increase when placing the filters back into operation; and 676 a hose and storage rack for washing filter walls. 677 7) 678 679 Backwash. Provisions must be made for washing filters as prescribed in this j) 680 subsection. 681

1<sup>st</sup> Notice JCAR350604-2208676r01 682 1) The community water supply must use filtered water provided at the 683 required rate by washwater tanks or a dedicated washwater pump to wash 684 the filters. 685 686 2) Backwash rate must meet the following requirements: 687 a minimum rate of 15 gal/min/ft<sup>2</sup>, consistent with water 688 A) 689 temperatures and specific gravity of the filter media; 690 a rate sufficient to provide for a 50 percent expansion of the filter 691 B) 692 bed; and 693 a reduced rate of 10 gal/min/ft<sup>2</sup> for full depth anthracite or granular 694 C) 695 activated carbon filters, upon approval by the Agency. 696 697 Washwater pumps in duplicate must be provided unless an alternate means 3) 698 of obtaining washwater is available. 699 700 4) The main washwater line must have a regulator or valve to obtain the 701 desired rate of filter wash with the washwater valves on the individual 702 filters open wide. 703 704 5) The main washwater line or backwash waste line must have a rate of flow 705 indicator, preferably with a totalizer, located so that it can be easily read 706 by the operator during the washing process. 707 708 6) Rapid changes in backwash water flow must be prevented. 709 710 7) Backwash must be completed with an operator in attendance to initiate the 711 backwash cycle and to control the return-to-service procedure to assure 712 that the effluent turbidity is less than 0.3 NTU when the filter is placed 713 back into operation for discharge to the clearwell. 714 715 Appropriate measures for cross connection control must be provided. 8) 716 Surface or subsurface wash facilities are required except for filters used 717 k) 718 exclusively for iron, radionuclides, arsenic or manganese removal. Wash 719 facilities may include a system of fixed nozzles or a revolving-type apparatus. All 720 devices must be designed: 721

to provide water pressures of at least 45 psi;

722

723

1)

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1<sup>st</sup> Notice

724 2) if connected to the treated water system, to prevent back siphonage by 725 properly installing a vacuum breaker or other approved device; and 726 to provide a rate of flow of 2.0 gpm/ft<sup>2</sup> of filter area with fixed nozzles or 727 3) 0.5 gpm/ft<sup>2</sup> with revolving arms. 728 729 730 1) Air scouring can be used in place of surface wash if the air scouring meets the 731 following requirements: 732 Air flow for air scouring the filter must be 3 to 5 ft<sup>3</sup>f<sup>3</sup>/min/ft<sup>2</sup> of filter area 733 1) 734 when the air is introduced in the underdrain; a lower air rate must be used 735 when the air scour distribution system is placed above the underdrains; 736 737 A method to avoid filter media loss during backwashing must be provided; 2) 738 739 Air scouring must be followed by a fluidization wash sufficient to 3) 740 restratify the media; 741 742 4) Air must be free from contamination; 743 744 5) If air scour distribution systems are placed at the media and supporting 745 bed interface, the air scour nozzles must be designed to prevent media 746 from clogging the nozzles or the air entering the air distribution system; 747 748 Piping for the air distribution system must not be flexible hose or other 6) soft material: 749 750 751 Air delivery piping must not: 7) 752 753 A) pass down through the filter media; and 754 755 B) have any arrangement in the filter design that would allow short-756 circuiting between the applied unfiltered water and the filtered 757 water; 758 759 When air scouring is being utilized, the backwash rate must be variable 8) 760 and must not exceed 8 gal/min, unless a higher rate is necessary to remove 761 scoured particles from filter media surfaces; and 762 763 9) Air scouring piping must not be installed in the underdrain unless the 764 underdrain was designed to accommodate the piping. 765 (Source: Amended at 46 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_) 766

/6/			
768			SUBPART G: DISINFECTION
769	G 41 604	<b>=</b> 25 G	
770	Section 604	.735 C	hlorinator Piping
771	2)	Casa	a Compaction Protection
772 773	a)	Cros	s Connection Protection-
774		1)	The chlorinator piping must be designed to prevent contamination of the
77 <del>4</del> 775		1)	treated water.
776			ireated water.
777		2)	For all systems required to disinfect under Section 604.700, piping must
778		2)	be arranged to prevent back flow or back siphonage between multiple
779			points of chlorine application.
780			T T T T T T T T T T T T T T T T T T T
781		3)	The water supply to each <u>educator</u> eductor must have a separate shutoff
782		,	valve.
783			
784	b)	Pipe	Material
785			
786		1)	The pipes carrying elemental liquid or dry gaseous chlorine under pressure
787			must be Schedule 80 seamless steel tubing or other materials
788			recommended by The Chlorine Institute in Pamphlet 6, Piping Systems for
789			Dry Chlorine, incorporated by reference in 35 Ill. Adm. Code 601.115.
790			These pipes must not be PVC.
791			
792		2)	Rubber, PVC, polyethylene (PE), or other materials recommended by The
793			Chlorine Institute must be used for chlorine solution piping and fittings.
794		2)	
795		3)	Nylon products are not acceptable for any part of the chlorine solution
796			piping system.
797	(C av.	1	mandad at 46 III Dag affactive
798 799	(Sou	rce: Ar	mended at 46 Ill. Reg, effective)
199 300			SUBPART H: SOFTENING
300 301			SUBFART II. SOFTENING
301	Section 604	805 C	ation Exchange Process
302	Section 004	.005 C	ation Exchange 1 focess
304	a)	Pre-t	treatment under Section 604.1010(b) or (c) is required when the content of
305	u)		manganese, or a combination of the two is 1 mg/L or more.
306		11011,	
307	b)	Desi	gn requirements must provide:
308	-,		C 1rr
309		1)	automatic regeneration based on volume of water softened; and

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810		
811		2) a manual override on all automatic controls.
812		
813	c)	The design capacity for hardness removal must not exceed 20,000 grains per
814		cubic foot when resin is regenerated with 0.3 pounds of salt per 1000 grains of
815		hardness removed.
816		
817	d)	The depth of the exchange resin must not be less than 3 feet.
818		
819	e)	Flow Rates
820		
821		1) The rate of softening must not exceed 7 gal/min/ft <sup>2</sup> of bed area.
822		
823		2) The backwash rate must be 6 to 8 gal/min/ft <sup>2</sup> of bed area.
824		
825		3) Rate of flow controllers or the equivalent must be installed.
826		
827	f)	The freeboard must be calculated based on the size and specific gravity of the
828		resin and the direction of water flow. Unless otherwise approved by the Agency
829		under Section 604.145(b), the washwater collector must be 24 inches above the
830		top of the resin on down flow units.
831		
832	g)	The bottoms, strainer systems and support for the exchange resin must conform to
833		criteria provided for rapid rate gravity filters in Section 604.605(f) and (g).
834		
835	h)	Brine must be evenly distributed over the entire surface of both upflow and
836		downflow units.
837		
838	i)	Backwash, rinse and air relief discharge pipes must be installed to prevent any
839		possibility of back siphonage.
840		
841	j)	Bypass Piping and Equipment
842		
843		1) Bypass must be provided around softening units to produce a blended
844		water of desirable hardness.
845		
846		2) Totalizing meters must be installed on the bypass line and on each softener
847		unit.
848		
849		3) The bypass line must have a shutoff valve. An automatic proportioning or
850		regulating device is recommended.
851		

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852 853 854	k)		When the applied water contains a chlorine residual, the cation exchange resin must be a type that is not damaged by residual chlorine.			
855 856	1)	Sampl	ling Taps			
857 858 859		1)	Smooth-nosed sampling taps must be provided for the collection of representative samples.			
860 861 862		2)	The taps must be located to provide for sampling of the softener influent, effluent and blended water.			
863 864 865		3)	The sampling taps for the blended water must be at least 20 feet downstream from the point of blending.			
866 867		4)	Petcocks are not acceptable as sampling taps.			
868 869	m)	Brine	and Salt Storage Tanks:			
870 871		1)	Salt dissolving or brine tanks and wet salt storage tanks must be covered and must be corrosion resistant.			
872 873 874 875 876 877		2)	The make-up water inlet must be protected from back siphonage. Water for filling the tank must be distributed over the entire surface by pipes above the maximum brine level in the tank. An automatic declining level control system on the make-up water line is recommended.			
878 879 880 881 882		3)	Wet salt storage basins must be equipped with manholes or hatchways for access and for direct dumping of salt from truck or railcar. Openings must be provided with raised curbs and watertight covers having overlapping edges similar to those required for finished water reservoirs.			
883 884 885 886		4)	Overflows, where provided, must be protected with corrosion resistant screens and must terminate with either a turned downed bend having a proper free fall discharge or a self-closing flap valve.			
887 888		5)	The salt must be supported on graduated layers of gravel placed over a brine collection system.			
889 890 891		6)	Alternative designs that are conducive to frequent cleaning of the wet salt storage tank may be approved by the Agency.			
892 893 894		7)	Total salt storage must provide for at least 30 days of operation.			

1st Notice JCAR350604-2208676r01 895 n) Corrosion control must be provided under Subpart I. 896 897 o) Suitable disposal must be provided for brine waste. 898 899 p) Pipes and contact materials must be resistant to the aggressiveness of salt. Plastic 900 and red brass are acceptable piping materials. Steel and concrete must be coated 901 with a non-leaching protective coating that is compatible with salt and brine. 902 903 q) Dry bulk salt storage must be enclosed and separated from other operating areas 904 to prevent damage to equipment. 905 906 (Source: Amended at 46 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_) 907 908 SUBPART I: STABILIZATION 909 910 Section 604.900 General Stabilization Requirements 911 912 a) Water distributed by community water supplies must be stable so as to not cause a 913 violation of 35 Ill. Adm. Code 601.101(a). 914 915 b) The following water quality parameters of finished water must be evaluated to ensure that water quality parameters minimize corrosion and minimize deposition 916 917 of excess calcium carbonate (CaCO<sub>3</sub>) scale throughout the distribution system of 918 the community water supply: 919 920 1) alkalinity (as CaCO<sub>3</sub>); 921 922 2) total hardness (as CaCO<sub>3</sub>); 923 924 3) calcium hardness (as CaCO<sub>3</sub>); 925 temperature; 926 4) 927 928 5) pH; 929 930 chloride; 6) 931 932 sulfate; 7) 933 934 8) total dissolved solids; 935

oxidation reduction potential;

936

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9)

1<sup>st</sup> Notice JCAR350604-2208676r01 938 10) conductivity; 939 940 11) iron; 941 942 12) manganese; 943 944 13) orthophosphate, if applicable; and 945 946 14) silica, if applicable. 947 948 c) The following may be used to determine the corrosivity of water distributed by a 949 community water supply: 950 Lead and Copper 951 1) 952 953 A) Optimal Corrosion Control Treatment Evaluation Technical 954 Recommendations for Primacy Agencies and Public Water 955 Systems, USEPA (March 2016); Office of Water (4606M); EPA 956 816-B-16-003, incorporated by reference at 35 Ill. Adm. Code 957 601.115; 958 959 Chloride Sulfate Mass Ratio (CSMR), calculated as follows: B) 960  $CMSR = \frac{Cl^{-}, expressed as mg/L}{SO_{4}^{-}, expressed as mg/L};$ 961 962 963 C) Coupon and pipe loop studies. 964 965 2) Iron and Steel 966 Larson-Skold Index (L-SI), calculated as follows: 967  $L\mathring{S}I = (Cl + SO_4) / alkalinity$ 968 969 970 (All parameters expressed as mg/L of equivalent CaCO<sub>3</sub>) 971 972 BOARD NOTE: The following equation provides a simplified procedure 973 for calculating L-SI: 974  $LS\check{Q} = \frac{(1.41)(mg/L Cl^{-}) + (1.04)(mg/L SO_{4}^{-2})}{mg/L \text{ alkalinity (as CaCO<sub>2</sub>)}}$ 975 976

Cl<sup>-</sup> expressed as mg/L chloride

977

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SO<sub>4</sub>-2 expressed as mg/L sulfate 978 979 980 3) Iron Steel and Concrete 981 982 Calcium Carbonate Precipitation Potential (CCPP), as referenced A) in Method 2330 C Standard Methods for Examination of Water 983 and Wastewater, 22<sup>nd</sup> edition, incorporated by reference in 35 Ill. 984 985 Adm. Code 611.102. 986 987 B) For water containing phosphates: 988 989 The Alkalinity Difference Technique, as described in i) 990 Method 2330 B.3.b and 2330 C.2.b Standard Methods for Examination of Water and Wastewater, 22<sup>nd</sup> edition, 991 incorporated by reference in 35 Ill. Adm. Code 611.102. 992 The CCPP is the difference between the initial and 993 994 equilibrated water's alkalinity (or calcium) values, when 995 expressed as CaCO<sub>3</sub>. 996 997 The Marble Test, as described in Method 2330 C.2.c ii) 998 Standard Methods for Examination of Water and Wastewater, 22<sup>nd</sup> edition, incorporated by reference in 35 999 Ill. Adm. Code 611.102. The Marble Test is similar to the 1000 1001 Alkalinity Difference Technique. The CCPP equals the 1002 change in alkalinity (or calcium) values during equilibration, when expressed as CaCO<sub>3</sub>. 1003 1004 1005 d) The following may be used to determine deposition of excess CaCO<sub>3</sub> scale: 1006 1007 1) CCPP, as referenced in Method 2330 B Standard Methods for Examination of Water and Wastewater, 22<sup>nd</sup> edition, incorporated by 1008 reference in 35 Ill. Adm. Code 611.102. 1009 1010 1011 2) For water containing phosphates: 1012 The Alkalinity Difference Technique, as described in Method 2330 1013 A) B.3.b and 2330 C.2.b Standard Methods for Examination of Water 1014 and Wastewater, 22<sup>nd</sup> edition, incorporated by reference in Section 1015 1016 611.102. The CCPP is the difference between the initial and 1017 equilibrated water's alkalinity (or calcium) values, when expressed 1018 as CaCO<sub>3</sub>. 1019

1020	B) The Marble Test as described in Method 2330 C.2.c Standard				
1021	Methods for Examination of Water and Wastewater, 22 <sup>nd</sup> edition,				
1022	incorporated by reference in Section 611.102. The Marble Test is				
1023	similar to the Alkalinity Difference Technique. The CCPP equals				
1024	the change in alkalinity (or calcium) values during equilibration,				
1025	when expressed as CaCO <sub>3</sub> .				
1026					
1027	BOARD NOTE: Calcium Carbonate Precipitation Potential (CCPP) can be calculated				
1028	using Trussell Technologies software: www.trusselltech.com/downloads?category=6.				
1029					
1030	CCPP does not apply to protection or corrosion of lead and copper plumbing materials or				
1031	to water containing phosphates. See "Internal Corrosion and Deposition Control", Water				
1032	Quality & Treatment, A Handbook on Drinking Water, 6 <sup>th</sup> ed. (2011), American Water				
1033	Works Association.				
1034					
1035	BOARD NOTE: Estimating Calcium Carbonate Precipitation Potential (CCPP) using the				
1036	Alkalinity Difference Technique or the Marble Test, both referenced in Standard				
1037	Methods for Examination of Water and Wastewater, 22 <sup>nd</sup> edition, incorporated by				
1038	reference at 35 Ill. Adm. Code 611.102, is described as "Calcium Carbonate Saturation".				
1039	Simplified Procedures for Water Examination, Manual of Water Supply Practices M12				
1040	(5 <sup>th</sup> ed. 2002), American Water Works Association.				
1041					
1042	Based on results of the "Calcium Carbonate Saturation" test, CCPP can be calculated as:				
1043					
1044	CCPP = Final mg/L alkalinity (as CaCO <sub>3</sub> ) - Initial mg/L alkalinity (as CaCO <sub>3</sub> )				
1045					
1046	Water is unsaturated with respect to calcium carbonate and may be corrosive if final				
1047	alkalinity is greater than initial alkalinity, a positive value in the equation above. If there				
1048	is alkalinity gain in the final alkalinity test, it indicates tendency to dissolve calcium				
1049	carbonate scale.				
1050					
1051	Water is oversaturated with calcium carbonate scale and may deposit calcium carbonate				
1052	coating in the water mains if final alkalinity is less than initial alkalinity, a negative value				
1053	in the equation above. If there is alkalinity loss in the final alkalinity test, it indicates				
1054	tendency to precipitate calcium carbonate scale. If final and initial alkalinity are the				
1055	same, the water is stable and in equilibrium with calcium carbonate.				
1056					
1057	CCPP is not applicable to protection or corrosion of lead and copper plumbing materials.				
1058	c c				
1059	Verifying the alkalinity titration endpoint by using a pH meter to verify the pH of the				
1060	titrated alkalinity sample is recommended, since titration endpoint visual color change				
1061	may be individually variable. If pH of the sample is not certain, consider using pH of				
1062	4.50 to represent the endpoint. See "Alkalinity Test", Standard Methods for Examination				

1063	of Wa	ater and Wastewater, 22 <sup>nd</sup> edition, incorporated by reference in 35 Ill. Adm. Code			
1064	611.10	· · · · · · · · · · · · · · · · · · ·			
1065					
1066	e)	Acceptable stability treatments include:			
1067					
1068		1)	carbo	n dioxide addition;	
1069					
1070		2)	acid a	ddition;	
1071					
1072		3)	phosp	hate addition;	
1073					
1074		4)	split t	reatment;	
1075					
1076		5)	alkali	chemical:	
1077					
1078			A)	hydrated lime	
1079					
1080			B)	sodium carbonate	
1081					
1082			C)	sodium bicarbonate	
1083					
1084			D)	sodium hydroxide;	
1085					
1086		6)	carbo	n dioxide reduced by aeration;	
1087					
1088		7)	calciu	m hydroxide; and	
1089					
1090		8)	sodiui	n silicate addition.	
1091					
1092	f)	When chemical addition is used for stabilization, the community water supply			
1093		must comply with requirements of Subpart K.			
1094					
1095	(Source	rce: Amended at 46 Ill. Reg, effective)			
1096					
1097				SUBPART J: OTHER TREATMENT	
1098	G .4 .604.4				
1099	Section 604.1	1005 A	nion Ex	kchange	
1100		ъ.		B 1 C 1 C 1 C 1 C 1 C 1 C 1 C 1 C 1 C 1	
1101	a)	Pre-treatment Requirements. Pre-treatment under Section 604.1010 is required			
1102		when	a comb	ination of iron and manganese exceeds 0.5 mg/L.	
1103	1 \				
1104	b)	Anion Exchange Treatment Design			
1105					

1<sup>st</sup> Notice JCAR350604-2208676r01 1106 1) Automatic regeneration based on volume of water treated must be used 1107 unless manual regeneration is justified and is approved by the Agency. 1108 1109 2) If a portion of the water is bypassed around the units and blended with 1110 treated water, the following requirements must be met: 1111 1112 A) the maximum blend ratio allowable must be determined based on 1113 the highest anticipated raw water nitrate level; and 1114 1115 B) a totalizing meter and a proportioning or regulating device or flow regulating valves must be provided on the bypass line. 1116 1117 1118 3) A manual override must be provided on all automatic controls. 1119 1120 4) Adequate freeboard must be provided to accommodate the backwash flow rate of the unit, ensuring the resin will not overflow. The freeboard must 1121 be calculated based on the size and specific gravity of the resin. 1122 1123 1124 5) The system must be designed to include an adequate under drain and 1125 supporting gravel system and brine distribution equipment. 1126 1127 Sampling Taps 6) 1128 1129 A) Smooth-nosed sampling taps must be provided for the collection of 1130 representative samples. 1131 1132 B) The taps must be located to provide for sampling of the softener influent, effluent and blended water. 1133 1134 1135 C) The sampling taps for the blended water must be at least 20 feet downstream from the point of blending. 1136 1137 1138 D) Petcocks are not acceptable as sampling taps. 1139 1140 7) Brine and Salt Storage Tanks: 1141 1142 Salt dissolving or brine tanks and wet salt storage tanks must be A) covered and must be corrosion resistant. 1143 1144 1145 B) The make-up water inlet must be protected from back siphonage. Water for filling the tank must be distributed over the entire 1146

1147

surface by pipes above the maximum brine level in the tank. An

1<sup>st</sup> Notice JCAR350604-2208676r01 1148 automatic declining level control system on the make-up water line 1149 is recommended. 1150 1151 C) Wet salt storage basins must be equipped with manholes or 1152 hatchways for access and for direct dumping of salt from truck or railcar. Openings must be provided with raised curbs and 1153 watertight covers having overlapping edges similar to those 1154 1155 required for finished water reservoirs. 1156 Overflows, where provided, must be protected with corrosion 1157 D) resistant screens and must terminate with either a turned downward 1158 1159 bend having a proper free fall discharge or a self-closing flap 1160 valve. 1161 1162 E) The salt must be supported on graduated layers of gravel placed 1163 over a brine collection system. 1164 1165 F) Alternative designs that are conducive to frequent cleaning of the 1166 wet salt storage tank may be approved by the Agency. 1167 1168 G) Total salt storage must provide for at least 30 days of operation. 1169 Exchange Capacity. The design capacity for nitrate removal must not exceed 1170 c) 1171 10,000 grains per cubic foot when the resin is regenerated at 15 pounds of salt per 1172 cubic foot of resin. 1173 1174 d) Number of Units. At least two units must be provided. The treatment capacity must be capable of producing the maximum average daily demand at a level 1175 1176 below the nitrate/nitrite MCL, with one exchange unit out of service. 1177 1178 Type of Media. The anion exchange media must be of the nitrate selective type. e) 1179 1180 f) Flow Rates. Unless otherwise approved by the Agency under Section 604.145(b), 1181 the following flow rates apply: 1182 The treatment flow rate must not exceed 5 gal/min/ft<sup>2</sup> of bed area. 1183 1) 1184 The backwash flow rate must be between 4.0 and 6.0 gal/min/ft<sup>2</sup> of bed 1185 2) 1186 area. 1187 The regeneration rate must be approximately 1.0 gal/min/ft<sup>2</sup> of bed area 1188 3) 1189 with a fast rinse approximately equal to the service flow rate.

191	g)	Cross Connec	tion Control. Backwash, rinse and air relief discharge pipes must be
192		installed to pr	event any possibility of back-siphonage.
193			
194	h)	Construction	Materials. Pipes and contact materials must be resistant to the
195		aggressivenes	s of salt. Plastic and red brass are acceptable materials. Steel and
196		concrete must	be coated with a non-leaching protective coating that is compatible
197		with salt and	orine.
198			
199	i)	Housing. Dry	bulk salt storage must be enclosed and separated from other
200		operating area	s to prevent damage to equipment.
201			
202	j)	Preconditioni	ng of the Media. Prior to startup of the equipment, the media must
203	-	be regenerated	d with no less than two bed volumes of water containing sodium
204		chloride follo	wed by an adequate rinse.
205			
206	(Sourc	e: Amended a	t 46 Ill. Reg, effective)
207			
208	Section 604.1	010 Iron and	Manganese Control
209			
210	a)	Except as pro	vided in 35 Ill. Adm. Code 611.300(e), treatment is required to meet
211		the iron and n	nanganese MCL as stated in Section 611.300(b).
212			
213	b)	Removal of In	on and Manganese by Oxidation, Detention and Filtration
214			-
215		1) Oxida	tion must be by aeration, as indicated in Subpart D, unless the
216		comm	unity water supply demonstrates chemical oxidation provides
217		equiva	llent results to aeration. Chemicals that may be used for oxidation
218		includ	e chlorine, sodium permanganate, potassium permanganate, ozone
219		or chlo	orine dioxide.
220			
221		2) Deten	tion
222		,	
223		A)	A minimum detention time of 30 minutes must be provided
224		,	following aeration to ensure that the oxidation reactions are
225			complete prior to filtration. This minimum detention time may be
226			modified only when a pilot plant study indicates completion of
227			oxidation reactions in less time.
228			
229		B)	The reaction tank/detention basin must be provided with an
230		,	overflow, vent and access hatch in accordance with Subpart M.
231			,
232		3) Filtrat	ion. Filters must conform to Subpart F.
233		,	1

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1 234 1235	c)	Remo	oval by	Manganese Greensand or Manganese Coated Media Filtration-
1236		1)	Dorm	anganate or chlorine must be added to the water upstream of the
1230		1)		per manufacturer's recommendation.
1237			miei,	per manuracturer's recommendation.
1236		2)	Ana	athresite madic can of at least six inches must be provided ever
		2)		nthracite media cap of at least six inches must be provided over
1240			mang	anese greensand.
1241		2)	N.T	11 1 1 4 1 0 1/ 1/62 1/1 61/4
1242		3)		nal backwash rate is 8 gal/min/ft <sup>2</sup> with filters containing manganese
1243			green	sand and 15 gal/min with manganese coated media.
1244			_	
1245		4)	Samp	ole taps must be provided:
1246				
1247			A)	prior to application of permanganate;
1248				
1249			B)	immediately ahead of filtration;
1250				
1251			C)	at points between the anthracite media and the manganese
1252				greensand;
1253				
1254			D)	halfway down the manganese greensand; and
1255			,	
1256			E)	at the filter effluent.
1257			,	
1258	d)	Seque	estratio	n of Iron and/or Manganese by Polyphosphates
1259	/	~ 1		
1260		1)	Seque	estration by polyphosphates must not be used when the combination
1261		-/	_	n and manganese exceeds 1 mg/L.
1262			or no	ii uita manganese enecedis 1 mg/2.
1263		2)	Phosi	phate solution must be kept covered and disinfected by carrying
1264		2)	-	eximately 10 mg/L free chlorine residual unless the phosphate is not
1265				o support bacterial growth and the phosphate is being fed from the
1266				red shipping container. Phosphate solutions having a pH of 2.0 or
1267				
			1688 1	nay also be exempted from this requirement by the Agency.
1268		2)	Dolem	the combates arrest not be condical about of income and accompany of
1269		3)		phosphates must not be applied ahead of iron and manganese removal
1270				nent. The point of application must be prior to aeration, oxidation or
1271			aisini	fection.
1272		45	<b></b>	
1273		4)	-	phosphate feed point must be located as far ahead of the oxidant feed
1274			point	as possible.
1275		~	_	
1276	e)	Seau	estratio	of Iron and/or Manganese by Sodium Silicates:

1277 1278 1) Sequestration by sodium silicate must not be used when iron, manganese 1279 or a combination of iron and manganese exceeds 2 mg/L. 1280 1281 A full-scale demonstration will be required to determine the suitability of 2) 1282 sodium silicate for the particular water and the minimum feed needed. 1283 1284 3) Chlorine or chlorine dioxide addition must accompany the sodium silicate 1285 addition. 1286 1287 4) Sodium silicate must not be applied ahead of iron or manganese removal 1288 treatment. 1289 (Source: Amended at 46 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_) 1290 1291 1292 SUBPART K: CHEMICAL APPLICATION 1293 1294 Section 604.1105 Feed Equipment and Chemical Storage 1295 1296 a) Solution Feed Equipment-1297 1298 Corrosion resistant containers must be provided for solution feeders. 1) 1299 1300 2) Containers must have non-corrodible covers with overhanging edges. 1301 Openings must be constructed to prevent contamination. 1302 1303 3) Scales or a volumetric measuring device must be provided for determining 1304 the amount of solution fed. 1305 1306 b) Feeder Redundancy 1307 1308 1) When chemical feed is necessary for the protection of the supply, such as 1309 chlorination, coagulation or other essential processes: 1310 1311 A) a minimum of two feeders must be provided with each having adequate capacity to provide the maximum dosage necessary; and 1312 1313 1314 B) the standby unit or a combination of units of sufficient size to meet 1315 capacity must be provided to replace the largest unit when out of 1316 service. 1317 1318 2) A separate feeder must be used for each chemical applied. 1319

1320 3) Each chemical feeder and day tank must be identified with its content. 1321 1322 4) Spare parts must be available on site for all feeders and chemical booster pumps to replace parts that are subject to wear and damage. 1323 1324 1325 Control c) 1326 1327 1) At automatically operated facilities: 1328 1329 A) The automatic controls must be designed to allow override by 1330 manual controls. 1331 1332 B) Chemical feeders must be electrically interconnected with the well 1333 or service pump so that they will not operate if the well or service 1334 pump is not operating. 1335 1336 2) Chemical feed rates must be proportional to the flow stream to achieve the 1337 appropriate dose of chemical application. 1338 1339 A means to measure water flow stream being dosed must be provided to 3) 1340 determine chemical feed rates. 1341 Provisions must be made for measuring the quantities of chemicals used. 1342 4) 1343 1344 Weighing Scales 5) 1345 1346 A) Weighing scales must be capable of providing reasonable precision in relation to average daily dose. 1347 1348 1349 B) Unless otherwise approved by the Agency under Section 604.145(b), treatment chemicals in gaseous state must be weighed; 1350 1351 1352 C) Fluoride solution fed from supply drums or carboys must be 1353 weighed; and 1354 1355 Volumetric dry chemical feeders must be weighed unless D) 1356 otherwise approved by the Agency under Section 604.145(b). 1357 1358 d) Dry chemical feeders must: 1359 1360 measure chemicals volumetrically or gravimetrically; 1) 1361

provide adequate water and agitation of the chemical within the slurry 1362 2) 1363 tank: and 1364 1365 3) completely enclose chemicals to prevent emission of dust to the operating 1366 room. 1367 1368 e) Positive Displacement Solution Pumps 1369 1370 1) Positive displacement type solution feed pumps may be used to feed liquid chemicals, but must not be used to feed chemical slurries. 1371 1372 1373 2) Pumps must be capable of operating at the required maximum rate against 1374 the maximum head conditions found at the point of injection. 1375 1376 3) Calibration tubes or mass flow monitors that allow for direct physical 1377 measurement of actual feed rates must be provided. 1378 1379 f) To ensure that chemical solutions cannot be siphoned or overfed into the water 1380 supply, liquid chemical feeders must: 1381 1382 1) assure discharge at a point of positive pressure; 1383 1384 2) provide vacuum relief; or 1385 1386 3) provide a suitable air gap or anti-siphon device. 1387 1388 Cross connection control must be provided to assure that: g) 1389 1390 1) the make-up water lines discharging to liquid storage tanks must be 1391 properly protected from backflow; 1392 1393 2) no direct connection exists between any sewer and a drain or overflow 1394 from a chemical feed system; and 1395 all overflows and drains from a chemical field system must have an airgap 1396 3) 1397 above the sewer or overflow rim of a receiving sump. 1398 1399 h) Chemical feed equipment location must be readily accessible for servicing, repair 1400 and observation of operation. 1401 1402 i) Make-up-water lines must be: 1403

1<sup>st</sup> Notice JCAR350604-2208676r01 1404 1) obtained from the finished water supply, or from a location sufficiently 1405 downstream of any chemical feed point to assure adequate mixing; and 1406 1407 2) ample in quantity and adequate in pressure. 1408 1409 i) Storage of Chemicals 1410 1411 Space must be provided for: 1) 1412 1413 A) at least 30 days of chemical supply; 1414 1415 B) convenient and efficient handling of chemicals; 1416 1417 dry storage conditions; and C) 1418 1419 D) a minimum storage volume of 1.5 times the gross shipping volume. 1420 1421 2) Offloading areas must be clearly labeled to prevent accidental cross-1422 contamination. 1423 1424 3) Chemicals must not be stored in confined spaces. 1425 1426 4) Chemicals must be stored in covered or unopened shipping containers, unless the chemical is transferred into an approved storage unit. 1427 1428 1429 Feed equipment and storage chemicals must be stored inside a building 5) 1430 unless otherwise approved by the Agency under Section 604.145(b). 1431 1432 6) Liquid chemical storage tanks must have a liquid level indicator. 1433 1434 Secondary Containment 7) 1435 1436 A) Liquid chemical storage tanks must have secondary containment 1437 consisting of an overflow and a receiving basin capable of 1438 receiving accidental spills or overflows without uncontrolled 1439 discharge. 1440 1441 B) A common receiving basin may be provided for each group of 1442 compatible chemicals that provides sufficient containment volume 1443 to prevent accidental discharge in the event of failure of the largest 1444 tank. Groups of compatible chemicals are as follows: acids, bases, 1445 salts and polymers, absorption powders, oxidizing powders and

compressed gases.

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1447			
1448		8)	Vents from storage tanks must have a corrosion resistant 24 mesh screen.
1449			
1450	k)	Bulk Liquid Storage Tanks	
1451			
1452		1)	A uniform strength of chemical solution must be maintained. Continuous
1453			agitation must be provided to maintain slurries in suspension.
1454			
1455		2)	A means to assure continuity of chemical supply must be provided.
1456			
1457		3)	Means must be provided to measure the liquid level in the tank.
1458			
1459		4)	Liquid storage tanks including any access openings must be kept securely
1460			covered.
1461			
1462		5)	Overflow pipes, when provided, must:
1463			
1464			A) be turned downward, with the end screened;
1465			
1466			B) have a free fall discharge; and
1467			
1468			C) be located where noticeable.
1469			
1470		6)	Liquid storage tanks must be vented, but not through vents in common
1471			with other chemicals or day tanks.
1472			
1473		7)	Each liquid storage tank must be provided with a valved drain in
1474			accordance with subsection (g).
1475			
1476		8)	Solution tanks must be located, and protective curbings provided, so that
1477			chemicals from equipment failure, spillage or accidental drainage do not
1478			enter the water in conduits, treatment or storage basins. Chemicals must
1479			be stored as required by subsection (j)(5).
1480			
1481	1)	Day '	Tanks
1482			
1483		1)	Day tanks must be provided where bulk storage of liquid chemical is
1484			provided.
1485			
1486		2)	Day tanks must meet all the requirements of subsection (k), except that
1487			shipping containers do not require overflow pipes and subsection drains.
1488			

1489		3)	Day tanks must be scale-mounted, or have a calibrated gauge painted or
1490			mounted on the side if liquid level can be observed in a gauge tube or
1491			through translucent sidewalls of the tank. In opaque tanks, a gauge rod
1492			may be used. The ratio of the area of the tank to its height must be such
1493			that unit readings are meaningful in relation to the total amount of
1494			chemical fed during a day.
1495			
1496		4)	Except for fluosilicic acid, hand pumps may be provided for transfer from
1497			a shipping container. When motor-driven transfer pumps are provided, a
1498			liquid level limit switch must be provided.
1499			
1500		5)	Tanks and tank refilling line entry points must be clearly labeled with the
1501			name of the chemical contained.
1502			
1503		6)	Filling of day tanks must not be automated.
1504			
1505	m)	Feed	l lines must be:
1506			
1507		1)	of durable, corrosion-resistant material;
1508			
1509		2)	protected against freezing;
1510			
1511		3)	designed to prevent clogging; and
1512			
1513		4)	color coded and labeled in accordance with Section 604.120.
1514			
1515	n)	Hand	dling. Provision must be made for the proper transfer of dry chemicals from
1516		shipp	ping containers to storage bins or hoppers, in such a way as to minimize the
1517		quan	tity of dust that may enter the room.
1518			
1519	o)	Hous	sing
1520			
1521		1)	Floor surfaces must be smooth and impervious, slip-proof and well
1522			drained.
1523			
1524		2)	Vents from feeders, storage facilities and equipment exhaust must
1525			discharge to the outside atmosphere above grade and remote from air
1526			intakes.
1527			
1528	(Sour	rce: Ar	mended at 46 Ill. Reg, effective)
1529			
1530			SUBPART M: STORAGE
1531			

1532	Section 604.	1350 C	Combination Pressure Tanks and Ground Storage
1533			
1534		_	ound storage, hydropneumatic storage and pumps may be considered in
1535	•	s for m	aintaining pressure on the distribution system. Design of such a system must
1536	include:		
1537			
1538	a)	a min	nimum ground storage volume equivalent to 1.5 times the average daily
1539		usage	<b>;</b> ;
1540			
1541	b)		nimum of two pumps, each capable of meeting the peak hourly flow provided
1542			ction 604.115(d). If more than two pumps are proposed, the peak hourly
1543		flow	must be met when any pump is out of service;
1544			
1545	c)		ectric generator with automatic start capable of providing power to pumps
1546			an produce the peak hourly flow as-provided in Section 604.115(d), plus
1547			cient power to operate all chemical feeders, appurtenances and equipment
1548			tial to plant operation. Consideration must be given to sizing the generator
1549		to pro	ovide power for at least one well; and
1550			
1551	d)	•	ropneumatic tank sized to provide service for a minimum of 10 minutes
1552		under	r the peak hourly flow provided in Section 604.115(d).
1553			
1554	(Sour	ce: Am	nended at 46 Ill. Reg, effective)
1555			
1556			SUBPART O: CROSS CONNECTIONS
1557			
1558	Section 604.	1510 C	Cross Connection Control Device Inspectors
1559			
1560	a)	-	pt as provided in subsection (c), cross connection control devices must be
1561			cted at least annually by a person approved by the Agency or its designee as
1562			ss connection control device inspector (CCCDI). The inspection of
1563		mech	anical devices must include physical testing in accordance with the
1564		manu	facturer's instructions.
1565			
1566		1)	Records of the annual inspection must be submitted to the community
1567			water supply.
1568			
1569		2)	Each device inspected must have a tag attached listing the date of the most
1570			recent test, name of CCCDI, and type and date of repairs.
1571			
1572		3)	A maintenance log must be maintained at the site of installation and must
1573			include:
1574			

1<sup>st</sup> Notice JCAR350604-2208676r01 1575 A) make, model and serial number of the backflow preventer, and its 1576 location at the site: 1577 1578 date of each test; B) 1579 1580 name and approval number of person performing the test; C) 1581 1582 type of test kit used and date of its most recent calibration; D) 1583 1584 E) test results and a brief statement indicating whether the results pass or fail the test; 1585 1586 1587 F) repairs or servicing required; 1588 1589 G) repairs and date completed; and 1590 1591 H) servicing performed and date completed. 1592 1593 Requirements for Cross Connection Control Device Inspector Approval b) 1594 1595 1) Each applicant for CCCDI Approval must: 1596 1597 A) be a person authorized to perform plumbing as described in the Illinois Plumbing License Law [225 ILCS 320/3(1)]. 1598 1599 1600 B) complete a training course offered by the Environmental Resources 1601 Training Center (see 110 ILCS 530) or the Agency's delegate on cross connection control device that includes hands on practice 1602 1603 testing of different types of backflow devices and proper 1604 maintenance and repair. 1605 1606 C) complete and submit an application for CCCDI Approval. 1607 1608 successfully complete both written and performance examinations D) 1609 demonstrating competency in the following: the principles of 1610 backflow and back-siphonage; the hazard presented to a potable 1611 water system; locations that require installation of cross-1612 connection control devices; identifying, locating, 1613 inspecting, testing, maintaining and repairing cross-connection control methods and devices in-line, as located throughout each 1614 system that connects to a community public water supply. The 1615

applicant must successfully complete:

1618 i) the written examination with a minimum score of 75%; and 1619 1620 ii) a performance-based examination by demonstrating competency in testing device procedures on all types of 1621 1622 devices at the examination center. 1623 1624 2) CCCDIs must renew the CCCDI Approval each year between May 1 and 1625 June 30. An application for CCCDI renewal will be sent by the Agency or its designee, and must be completed and returned by June 30 of the 1626 1627 renewal year. CCCDIs must complete an eight-hour recertification course 1628 every three years from the date of the original issuance of the CCCDI license. The course must be offered by the Environmental Resources 1629 Training Center or the Agency's delegate and include a written and 1630 1631 practical exam demonstrating competency in backflow prevention testing. 1632 1633 3) A CCCDI Approval or admission to examination for CCCDI Approval must be suspended, revoked or not issued by the Agency for any one or 1634 1635 more of the following causes: 1636 1637 A) Practice of any fraud or deceit in obtaining or attempting to obtain 1638 a CCCDI Approval, including misrepresentation of approval; 1639 1640 B) Any repeated, flagrant or willful negligence or misconduct in the inspection, testing or maintenance of cross connection control 1641 1642 devices; 1643 1644 C) Falsification of reports required by this Part; 1645 1646 D) Willful violation of the Environmental Protection Act or any rules 1647 adopted under it. 1648 1649 4) Suspension and Revocation Procedures 1650 1651 A) Any person may file with the Agency a written complaint 1652 regarding the conduct of a CCCDI approved under this Part. The 1653 complaint must state the name and address of the complainant, the 1654 name of the CCCDI, and all information that supports the 1655 complaint. 1656 1657 B) The Agency may initiate the suspension or revocation procedure on the basis of any written complaint or on its own motion. The 1658 Agency's decision to institute suspension or revocation 1659

#### 1<sup>st</sup> Notice JCAR350604-2208676r01 1660 proceedings will be based on the seriousness of the violation and 1661 its potential deleterious impact upon public health and safety. 1662 1663 When the suspension or revocation procedure is initiated, the C) 1664 Agency must notify the CCCDI by certified mail that suspension or revocation is being sought. The notice must specify the cause 1665 upon which suspension or revocation is sought and include the 1666 1667 procedures for requesting a hearing before the Agency. Request for hearing must be made in writing within 14 days after receipt of 1668 the Agency's certified notification. If no hearing is requested, the 1669 Agency will suspend or revoke the CCCDI Approval. 1670 1671 1672 D) Should a hearing be requested, the Director must appoint one or 1673 more Agency employees to chair the proceedings. The hearing must be conducted according to the hearing requirements of 35 Ill. 1674 1675 Adm. Code 168. 1676 1677 E) The Director must make a decision within 30 days after receiving 1678 the hearing transcript. The Director must give written notice of that decision and reasons for the decision to the CCCDI by 1679 1680 certified mail. 1681 1682 F) Within 30 days after receiving a notice of suspension or revocation from the Agency, the CCCDI may appeal the suspension or 1683 1684 revocation to the Pollution Control Board. The suspension or revocation of the CCCDI's Approval must be stayed pending a 1685 1686 final decision on the appeal by the Board. 1687 1688 Backflow preventers located in the treatment plant, wellhouse or booster station c) 1689 of a community public water supply facility must be inspected at least annually by either an approved CCCDI or by a certified water supply operator who has 1690 completed the qualifications listed in subsections (b)(1)(B) and (D). 1691 1692 1693 When the inspection is conducted by a certified water supply operator who 1) 1694 has completed the necessary qualifications, records must be kept as 1695 required by subsection (a)(3). 1696 1697 2) Each device inspected must have a tag attached listing the date of the most 1698 recent test, name of the CCCDI, and type and date of repairs.

Section 604.1520 COVID-19 Emergency Provisions (Repealed)

(Source: Amended at 46 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

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1704	Due to the public health emergency related to the COVID-19 outbreak, the CCCDI approval
1705	renewal application deadlines for 2020 pursuant to Section 604.1510(b)(2) are extended. For
1706	renewal year 2020, CCCDIs must renew their CCCDI Approval between August 31 and October
1707	30. An application for CCCDI renewal will be sent by the Agency or its designee and must be
1708	completed and returned by October 30, 2020.
1709	
1710	(Source: Repealed at 46 Ill. Reg, effective)